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| 10/609,443 | 06/26/2003 | Hok-Kin Choi | 42P16768 | 7361 |

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BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER

KLEMANSKI, HELENE G

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1755

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/609,443

Applicant(s)

CHOI ET AL.

Examiner

Helene Klemanski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-32, 34, 35, 39-43, 45, 46, 48, 50 and 51 is/are rejected.
- 7) ☒ Claim(s) 33, 36-38, 44, 47, 49, 52 and 53 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. None of the claims have been amended, claims 1-29 have been deleted and new claims 30-52 have been added. Hence, claims 30-52 are pending in the application. Applicants should note that new claims 42-44 did not have status indicators next to them. The examiner is requesting that in response to this Office Action, applicants resubmit a listing of the claims with at least claims 42-44 having the status indicator of "previously presented" along with any other claims that have not been amended.
2. The objection to the drawings as set forth in the previous Office Action dated January 25, 2005 has been overcome by applicant's amendments and is now withdrawn.
3. The provisional obviousness type double patenting rejections as set forth in the previous Office Action dated January 25, 2005 have been overcome by applicant's amendments and are now withdrawn.
4. The 102(b) rejection over EP 1022770 as set forth in the previous Office Action dated January 25, 2005 has been overcome by applicant's amendments and is now withdrawn.
5. The 102(e) rejection over Chebiam et al. (US 20030113576) as set forth in the previous Office Action dated January 25, 2005 has been overcome by applicant's amendments and is now withdrawn.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 30-32, 34, 35, 39-43, 45, 46, 48, 50 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1022770 in view of Dukovic et al.

EP 1022770 teaches an electroless plating liquid comprising a salt of copper or nickel, a chelating agent such as glycine (i.e. carboxylic acid), an ammonium salt such as ammonium succinate (i.e. carboxylate), a reducing agent such as ammonium hypophosphite and a surfactant in the form of an ammonium salt. The electroless plating liquid is prepared by; (1) mixing a salt of copper or nickel, the glycine and the ammonium succinate to form a first solution; (2) adjusting the pH by adding aqueous ammonia to form a second solution and (3) adding the ammonium hypophosphite and the surfactant to the second solution to form the electroless plating solution. See col. 7, line 45 – col. 8, line 35. EP 1022770 fails to teach storing of the above first solution for at least two days as claimed by applicants.

Dukovic et al. teaches a method and apparatus for controlling the chemical composition of a plating bath by a dosing system. The dosing system adds five different components such as fresh plating solution and water to the central bath. The components are supplied through bulk delivery lines and are contained in bottles in the dosing system before being delivered to the central bath. Dukovic et al. further teaches

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that depending on the use of the system, the bottles may have to be filled as frequently as once every three days. See Figure 1, col. 2, lines 63-67, col. 7, lines 40-48 and col. 8, lines 33-40.

Therefore, it would have been obvious to one of ordinary skill in the art to have stored the components of the electroless plating solution of EP 1022770 for at least two days since Dukovic et al. disclose that additives of a plating solution may be stored for at least three days before being mixed together to form a plating solution as claimed by applicants.

8. Claims 30-32, 40-42, 45, 46, 48, 50 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chebiam et al. (US 20030113576).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing

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that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Chebiam et al. (US 2003/0113576) teach an electroless plating solution comprising a metal ion such as nickel or cobalt, a pH-adjusting agent such as tetramethylamine hydroxide, a single complexing/buffering agent such as ammonium sulphate, at least primary reducing agent such as sodium borohydride or dimethylamineborane, an optional secondary reducing agent such as ammonium hypophosphite and optionally a wetting agent. The electroless plating liquid is prepared by; (1) mixing a metal ion and the ammonium sulphate to form a first solution; (2) adjusting the pH by adding tetramethylamine hydroxide to form a second solution; (3) after the second solution is at a preferred pH and temperature the primary reducing agent and the optional secondary reducing agents are added to the second solution to form a third solution and (4) the third solution is applied to a substrate to cause electroless deposition of the metal. See para. 0011, para. 0014, paras. 0017-0020, para. 0022, paras. 0025-0028, paras. 0034-0035, para. 0046, para. 0058, Fig. 3 and claims 1, 22 and 23. It is the examiner's position that the ammonium sulfate complexing agent of the above reference would act as a complexing agent component *and* the ammonium salt component of applicant's electroless solution. Chebiam et al. (US 2003/0113576) fails to teach storing of the above first solution for at least two days as claimed by applicants.

Dukovic et al. teaches a method and apparatus for controlling the chemical composition of a plating bath by a dosing system. The dosing system adds five different

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components such as fresh plating solution and water to the central bath. The components are supplied through bulk delivery lines and are contained in bottles in the dosing system before being delivered to the central bath. Dukovic et al. further teaches that depending on the use of the system, the bottles may have to be filled as frequently as once every three days. See Figure 1, col. 2, lines 63-67, col. 7, lines 40-48 and col. 8, lines 33-40.

Therefore, it would have been obvious to one of ordinary skill in the art to have stored the components of the electroless plating solution of Chebiam et al. (US 20030113576) for at least two days since Dukovic et al. disclose that additives of a plating solution may be stored for at least three days before being mixed together to form a plating solution as claimed by applicants.

Allowable Subject Matter

9. Claims 33, 36-38, 44, 47, 49, 52 and 53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter: With respect to claims 38 and 49, these claims teach a method comprising (1) storing a solution containing a subset of a group consisting of cobalt ion, citric acid, ammonium chloride and tetramethylammonium hydroxide and (2) nearer to the time when the solution will be used in a deposition process, using the solution to form a

second electroless deposition solution comprising the entire group. The prior art of record generally teaches cobalt electroless plating solutions comprising cobalt ions, a complexing agent such as ammonium sulfate and tetramethylammonium hydroxide but fails to teach or fairly suggest storing the solution containing a subset of a group consisting of cobalt ion, citric acid, ammonium chloride and tetramethylammonium hydroxide and at a later time using the solution for electroless deposition as claimed by applicants.

With respect to claims 33, 36, 37, 44, 47, 52 and 53, none of the prior art of record teaches or fairly suggests a method of storing a solution wherein (1) the first solution comprising a metal ion, a complexing agent and a strong base and lacks the ammonium salt and at a later time adding the ammonium salt to form a second solution available for electroless deposition process and (2) wherein the complexing agent is a carboxylic acid as claimed by applicants.

Response to Arguments

11. Applicant's arguments with respect to claims 30-52 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Klemanski whose telephone number is (571) 272-1370. The examiner can normally be reached on Monday-Friday 5:30-2:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Helene Klemanski
Primary Examiner
Art Unit 1755



HK
May 26, 2005